

## Claims

- [c1] 1. A method for determining a supply chain plan comprising:
- creating, from a single demand record, a plurality of distinct demand records, wherein each of said distinct demand records has a different demand date;
  - and
  - performing core processing to create said supply chain plan, wherein said core processing considers all of said distinct demand records.
- [c2] 2. The method in claim 1, further comprising performing postprocessing on said supply chain plan to select one of said distinct demand records for supplying said single demand record.
- [c3] 3. The method of claim 1, wherein said distinct demand records have different demand priorities.
- [c4] 4. The method of claim 3, further comprising performing a binning operation to represent said distinct demand records with demand priorities.
- [c5] 5. The method of claim 1, further comprising selecting one of said distinct demand records for supplying said

single demand record, based at least in part upon pricing.

[c6] 6. The method of claim 1, wherein said different demand dates comprise a commit date and a request date.

[c7] 7. A method of production planning that considers multiple due dates for providing the same resource to the same demand item, wherein said multiple due dates comprise a first date when said resource can be provided to said demand item, and a later second date when said resource must be provided to said demand item, said method comprising:

- creating, from a single part number, a first part number associated with providing said resource to said demand item by said first date;
- creating, from said single part number, a second part number associated with providing said resource to said demand item by said second date;
- performing production planning for both said first part number and said second part number to determine when said resource can be provided to said demand item; and
- selecting one of said first part number and said second part number to satisfy said demand item.

[c8] 8. The method in claim 7, wherein said first part number

has a different priority than said second part number.

- [c9] 9. The method in claim 7, further comprising reporting to said demand item whether said resource will be supplied by said first date or said second date.
- [c10] 10. The method in claim 7, further comprising creating duplicate binning records to separately provide resources to supply said first part number and said second part number.
- [c11] 11. The method in claim 7, wherein said process of production planning simultaneously and separately processes objective functions and constraints for said first part number from said second part number.
- [c12] 12. The method in claim 7, wherein said second part number and said first part number comprise artificial part numbers that are based on said single part number.
- [c13] 13. The method in claim 7, wherein said process of production planning simultaneously performs production planning for other resources and other demand items.
- [c14] 14. A method of production planning that considers multiple due dates for providing the same resource to the same demand item, wherein said multiple due dates comprise a first date when said resource can be provided

to said demand item, and a later second date when said resource must be provided to said demand item, said method comprising:

solving a production planning model based upon said first date to produce a first solution;  
re-solving said production planning model based upon said second date to produce a second solution;  
and  
optimizing between said first solution and said second solution.

- [c15] 15. The method of claim 14, wherein said re-solving processing is based on iterative solutions of a linear program.
- [c16] 16. The method in claim 14, further comprising before re-solving said production planning model, sorting demand records in order of importance.
- [c17] 17. The method in claim 16, wherein said re-solving is performed on each demand item in the sorted order of importance.
- [c18] 18. The method in claim 14, further comprising before re-solving said production planning model, changing lower bound constraints on backorder variables.
- [c19] 19. The method in claim 14, further comprising report-

ing the optimal solution produced during said optimizing process.

[c20] 20. The method in claim 14, wherein said re-solving process changes the required date for a single demand item, and wherein said re-solving process is repeated for all demand items that have a first date that is before a corresponding second date.

[c21] 21. A method for determining a supply chain plan comprising:

creating, from a single demand record, a plurality of distinct demand records, wherein each of said distinct demand record has a different demand date;  
performing core processing to create said supply chain plan, wherein said core processing considers all of said distinct demand records;  
selecting one of said distinct demand records for supplying said single demand record, wherein said selecting process is based at least in part upon pricing.

[c22] 22. The method in claim 21, wherein said selecting process provides different prices for different demand dates.

[c23] 23. The method of claim 21, wherein said distinct de-

mand records have different demand priorities.

- [c24] 24. The method of claim 23, further comprising performing a binning operation to represent said distinct demand records with demand priorities.
- [c25] 25. The method of claim 21, wherein said core processing is based on iterative solutions of a linear program.
- [c26] 26. The method of claim 21, wherein said different demand dates comprise a commit date and a request date.
- [c27] 27. A program storage device readable by machines, tangibly embodying a program of instructions executable by the machine to perform a method of production planning that considers multiple due dates for providing the same resource to the same demand item, wherein said multiple due dates comprise a first date when said resource can be provided to said demand item, and a later second date when said resource must be provided to said demand item, said method comprising:
- creating, from a single part number, a first part number associated with providing said resource to said demand item by said first date;
  - creating, from said single part number, a second part number associated with providing said resource to

said demand item by said second date;  
performing production planning for both said first part number and said second part number to determine when said resource can be provided to said demand item; and  
selecting one of said first part number and said second part number to satisfy said demand item.

- [c28] 28. The program storage device in claim 27, wherein said first part number has a different priority than said second part number.
- [c29] 29. The program storage device in claim 27, wherein said method further comprises reporting to said demand item whether said resource will be supplied by said first date or said second date.
- [c30] 30. The program storage device in claim 27, wherein said method further comprises creating duplicate binning records to separately provide resources to supply said first part number and said second part number.
- [c31] 31. The program storage device in claim 27, wherein said process of production planning simultaneously and separately processes objective functions and constraints for said first part number from said second part number.
- [c32] 32. The program storage device in claim 27, wherein

said second part number and said first part number comprise artificial part numbers that are based on said single part number.

- [c33] 33. The program storage device in claim 27, wherein said process of production planning simultaneously performs production planning for other resources and other demand items.